

# **WINDSHIELD WIPER BLADE SHARPENER DEVICE**

## **BACKGROUND OF THE INVENTION**

### **1. Field of the Invention**

The present invention relates to a windshield wiper blade  
5 sharpener device, and more particularly to a portable windshield  
wiper blade sharpener device for easily cleaning or sharpening the  
windshield wiper blades.

### **2. Description of the Prior Art**

Typical windshield wiper blades are provided to move over  
10 and to clean outer surfaces of windshields of vehicles. After using,  
or after being hardened by sunshine for a period of time, the  
windshield wiper blades may be hardened and/or broken, and thus  
may not be used to effectively clean the windshields.

For allowing the windshields of the vehicles to be suitably  
15 cleaned by the windshield wiper blades, the windshield wiper blades  
should be cleaned or sharpened from time to time, in order to  
remove the hardened portions or parts of the windshield wiper  
blades.

For example, U.S. Patent No. 3,613,318 to Gianatasio discloses  
20 one of the typical windshield wiper blade sharpener devices, and  
comprises a windshield sharpener attachment for attaching onto the  
windshields of the vehicles, and having an abrasive coated surface  
formed thereon for engaging with and for sharpening the windshield  
wiper blades.

25 However, the windshield sharpener attachments should be  
attached onto the windshields of the vehicles, and thus will interfere  
the field of vision of the vehicle drivers.

The present invention has arisen to mitigate and/or obviate the afore-described disadvantages of the conventional windshield wiper blade sharpener devices.

### **SUMMARY OF THE INVENTION**

5       The primary objective of the present invention is to provide a windshield wiper blade sharpener device including a portable structure for being easily carried and operated by users, and for easily cleaning or sharpening the windshield wiper blades.

10       In accordance with one aspect of the invention, there is provided a windshield wiper blade sharpener device comprising a block including a groove formed therein for receiving a wiper blade, and an abrasive coated surface provided in the groove of the block for engaging with and for sharpening the wiper blade.

15       The groove of the block includes a V-shape having two abrasive coated surfaces provided therein. The block includes at least one passage formed in the abrasive coated surface of the block and communicating with the groove thereof. The block includes at least one orifice formed therein and communicating with the groove thereof.

20       A casing may further be provided and attached to the block and including a chamber formed therein. The casing includes a fluid received in the chamber thereof for supplying to the groove of the block via the orifice of the block.

25       A cover may further be provided and attached to the block, to shield the groove of the block. The cover includes at least one stud extended therefrom, and engaged onto the orifice of the block, to block and to shield the orifice of the block.

The block includes a paper sheet engaged in the groove thereof and having the abrasive coated surface provided on the paper sheet. The block further includes a board engaged in the groove thereof and having the paper sheet attached onto the board. The block  
5 includes a pair of flanges extended therefrom to engage with the board and to retain the board in the groove of the block.

The block includes at least one second groove formed therein, and an abrasive coated surface provided in the second groove of the block. The block includes an outer surface having an abrasive  
10 coated surface provided thereon. The block may be made of silicon carbide materials, crystalon materials, tourmaline materials, calcium carbide materials, or porcelain materials.

Further objectives and advantages of the present invention will become apparent from a careful reading of the detailed description  
15 provided hereinbelow, with appropriate reference to the accompanying drawings.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is an exploded view of a windshield wiper blade sharpener device in accordance with the present invention;

20 FIG. 2 is a cross sectional view taken along lines 2-2 of FIG. 3;

FIG. 3 is a cross sectional view taken along lines 3-3 of FIG. 2;

FIG. 4 is an exploded view similar to FIG. 1, illustrating the other arrangement of the windshield wiper blade sharpener device;

FIG. 5 is a cross sectional view of the windshield wiper blade sharpener device as shown in FIG. 4, illustrating the operation of  
25 the windshield wiper blade sharpener device;

FIG. 6 is an enlarged partial cross sectional view of the

windshield wiper blade sharpener device as shown in FIGS. 4 and 5;

FIG. 7 is a plan schematic view illustrating the operation of the windshield wiper blade sharpener device;

FIGS. 8, 9 are top plan schematic views showing two different  
5 shapes of the windshield wiper blade sharpener device;

FIG. 10 is an exploded view illustrating the formation of the abrasive coated surfaces on the windshield wiper blade sharpener device;

FIG. 11 is a cross sectional view illustrating the operation of  
10 the windshield wiper blade sharpener device as shown in FIG. 10;

FIG. 12 is an exploded view illustrating the other formation processes of the abrasive coated surfaces on the windshield wiper blade sharpener device;

FIG. 13 is a perspective view illustrating the other embodiment  
15 of the windshield wiper blade sharpener device; and

FIG. 14 is a cross sectional view illustrating the operation of the windshield wiper blade sharpener device as shown in FIG. 12.

#### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

Referring to the drawings, and initially to FIGS. 1-3, a  
20 windshield wiper blade sharpener device in accordance with the present invention comprises a block 30 including one or more V-shaped grooves 31 formed therein, and each of the V-shaped grooves 31 is formed or defined by two surfaces 33, such as abrasive coated surfaces 33.

25 For example, the block 30 may include one V-shaped groove 31 formed therein, as shown in FIGS. 4-6 and 10-12, or may include two or more V-shaped grooves 31 formed therein, as shown in FIGS.

1-3 and 13, and each also formed or defined by two surfaces 33, such as abrasive coated surfaces 33, to form a W-shaped structure. The block 30 may be formed or made of silicon carbide materials, crystolon materials, calcium carbide materials, tourmaline materials, 5 porcelain materials, or the like.

The block 30 may further include one or more orifices 32 formed therein and communicating with each of the V-shaped grooves 31, and may further include one or more passages 34 formed in each of the abrasive coated surfaces 33, and 10 communicating with the V-shaped grooves 31. As shown in FIGS. 8 and 9, the passages 34 of the block 30 may be formed into various or different shapes or configurations.

In operation, as shown in FIGS. 5-7, the wiper blade 21 of the typical windshield wiper device 20 may be engaged into either of 15 the V-shaped grooves 31 of the block 30, for engaging with the abrasive coated surfaces 33, and for being scraped or sharpened by the abrasive coated surfaces 33 of the block 30. The scraped chips or the like from the wiper blade 21 of the windshield wiper device 20 may be drain out via the passages 34 and/or the orifices 32 of the 20 block 30.

It is preferable that the block 30 includes a recesses segment 35 formed in the lower portion thereof, to form or define a peripheral shoulder 36 therein. A casing 40 is engageable onto the bottom of the block 30 and engageable with the peripheral shoulder 36 of the 25 block 30 to position or to anchor the casing 40 to the block 30.

The casing 40 includes a chamber 41 formed therein to receive an active agent for rubber material or a fluid 42 therein which may

be permeated or supplied into the grooves 31 of the block 30 via the orifices 32 of the block 30, for engaging with the wiper blade 21 of the windshield wiper device 20, and for allowing the scraped chips from the wiper blade 21 may be easily drain out via the passages 34  
5 of the block 30.

It is preferable that the casing 40 includes a recesses segment 43 formed in the upper portion thereof, to form or define a peripheral shoulder 44 therein. A cover 50 is engageable onto the upper portion of the casing 40 and engageable with the peripheral  
10 shoulder 44 of the casing 40 to position or to anchor the cover 50 to the casing 40, and to suitably cover or retain or shield the block 30 within the casing 40 and the cover 50.

The cover 50 may include one or more studs 51 extended therein (FIGS. 2, 3), and engageable onto the orifices 32 of the  
15 block 30, for blocking the orifices 32 of the block 30, and for preventing the fluid 42 from being continuously permeated or supplied into the grooves 31 of the block 30 via the orifices 32 of the block 30.

Referring next to FIG. 10, a board 70 may further be provided  
20 and may include a notch 71 longitudinally formed therein for allowing the board 70 to be folded into a V-shaped structure, and a paper sheet 72 may be attached onto the board 70 and having the abrasive coated surfaces 33 formed or provided or applied thereon.

The board 70 may then be engaged into the groove 31 of the  
25 block 30, and may be anchored and retained within the groove 31 of the block 30 with two opposite flanges 38, and/or may further be solidly secured to the block 30 with adhesive materials or the like.

The abrasive coated surfaces 33 formed or provided or applied on the board 70 may also be used to sharpen the wiper blade 21 of the windshield wiper device 20 (FIG. 11).

Alternatively, as shown in FIG. 12, the paper sheet 72 may also  
5 be directly attached or secured onto the block 30 and located within the groove 31 of the block 30, and the abrasive coated surfaces 33 formed or provided or applied on the paper sheet 72 may thus be used to form the abrasive coated surfaces 33 for the block 30. The abrasive coated surfaces 33 formed or provided or applied on the  
10 paper sheet 72 may also be used to sharpen the wiper blade 21 of the windshield wiper device 20 (FIG. 14).

As shown in FIGS. 10, 12, another paper sheet 72 may further be attached to either the outer or the bottom surface of the block 30 and may have the abrasive coated surface 33 formed or applied  
15 thereon, for engaging with and for sharpening the wiper blade 21 of the windshield wiper device 20 directly.

Accordingly, the windshield wiper blade sharpener device in accordance with the present invention includes a portable structure for being easily carried and operated by users, and for easily  
20 cleaning or sharpening the windshield wiper blades.

Although this invention has been described with a certain degree of particularity, it is to be understood that the present disclosure has been made by way of example only and that numerous changes in the detailed construction and the combination  
25 and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.